Small Business Innovation Research/Small Business Tech Transfer

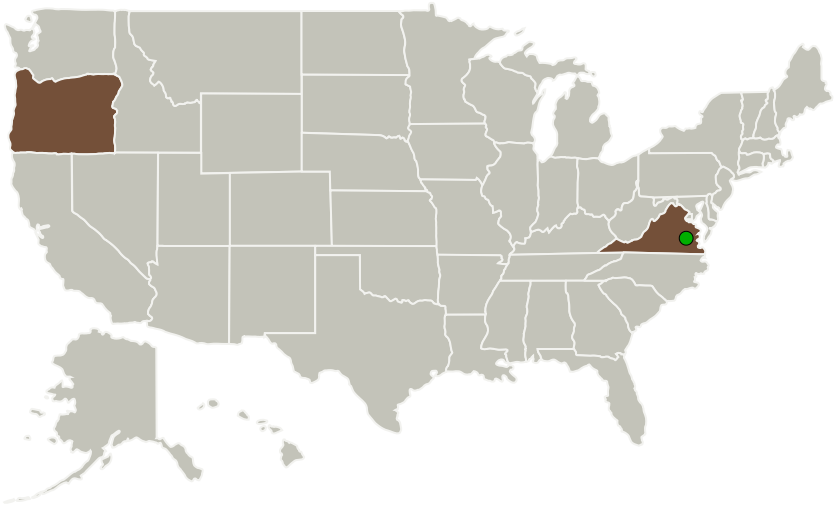
Convective Induced Turbulence Detection in Oceanic Trajectory-Based Operations, Phase I

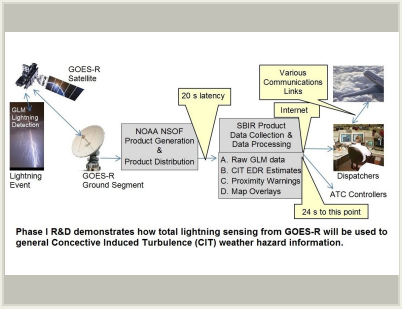
Completed Technology Project (2015 - 2015)

Project Introduction

We propose to develop a Convective-Induced Turbulence (CIT) hazard detection system for Oceanic Trajectory-Based Operations (TBO) based on satellite-based observations of lightning and other supporting data. The system is based on total lightning sensing as an indicator of the location and severity of in-cloud CIT. Total lightning activity will be measured over oceanic airspace at high temporal resolution from the Geostationary Lightning Mapper (GLM) on the Geostationary Operational Environmental Satellite R-Series (GOES R) in 2016. This opens up a unique research and business opportunity; we seek to investigate the relationship between CIT and total lightning measurements, and determine the skill of total lightning as an indicator of CIT. We will be able to provide turbulence estimates for oceanic flights and automatically warn airline dispatchers of upcoming weather hazards in TBO over oceanic airspaces.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
The Innovation Laboratory, Inc.	Lead Organization	Industry Women-Owned Small Business (WOSB)	Portland, Oregon
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

Primary U.S. Work Locations	
Oregon	Virginia

Project Transitions

June 2015: Project Start

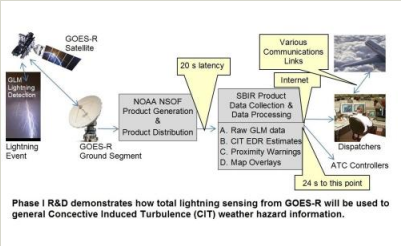
December 2015: Closed out

Closeout Summary: Convective Induced Turbulence Detection in Oceanic Trajectory-Based Operations, Phase I Project Image

Closeout Documentation:

- Final Summary Chart Image*(https://techport.nasa.gov/file/138901)*

Images



Briefing Chart Image
Convective Induced Turbulence Detection in Oceanic Trajectory-Based Operations, Phase I *(https://techport.nasa.gov/image/136031)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

The Innovation Laboratory, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

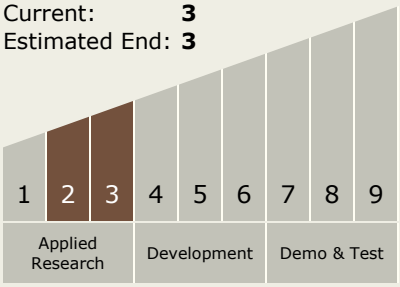
Carlos Torrez

Principal Investigator:

Jimmy Krozel

Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**



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Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
  - TX11.4 Information Processing
    - TX11.4.5 Cyber Infrastructure

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System